

# Hereditarily conjugacy separable groups

Ashot Minasyan  
(University of Southampton, UK)

A group  $G$  is called *conjugacy separable* if for any two non-conjugate elements  $x, y \in G$ , there is a homomorphism  $\psi$  from  $G$  to a finite group  $Q$  such that  $\psi(x)$  is not conjugate to  $\psi(y)$  in  $Q$ .  $G$  is said to be *hereditarily conjugacy separable* if every finite index subgroup  $K \leq G$  is conjugacy separable.

Conjugacy separability is stronger than residual finiteness and has a number of useful applications. However, this property is more difficult to establish. The (few) known classes of (hereditarily) conjugacy separable groups include virtually polycyclic groups, virtually free groups, virtually surface groups and finitely presented residually free groups.

It was recently shown that right angled Artin groups are hereditarily conjugacy separable. We will discuss several consequences of this result. For instance, combining it with the work of F. Haglund and D. Wise, one is able to conclude that fundamental groups of many (“special”) cube complexes are conjugacy separable. This gives a hereditarily conjugacy separable version of Rips’s construction, allowing to produce examples of finitely generated groups that are conjugacy separable but not hereditarily conjugacy separable.